FIG.1

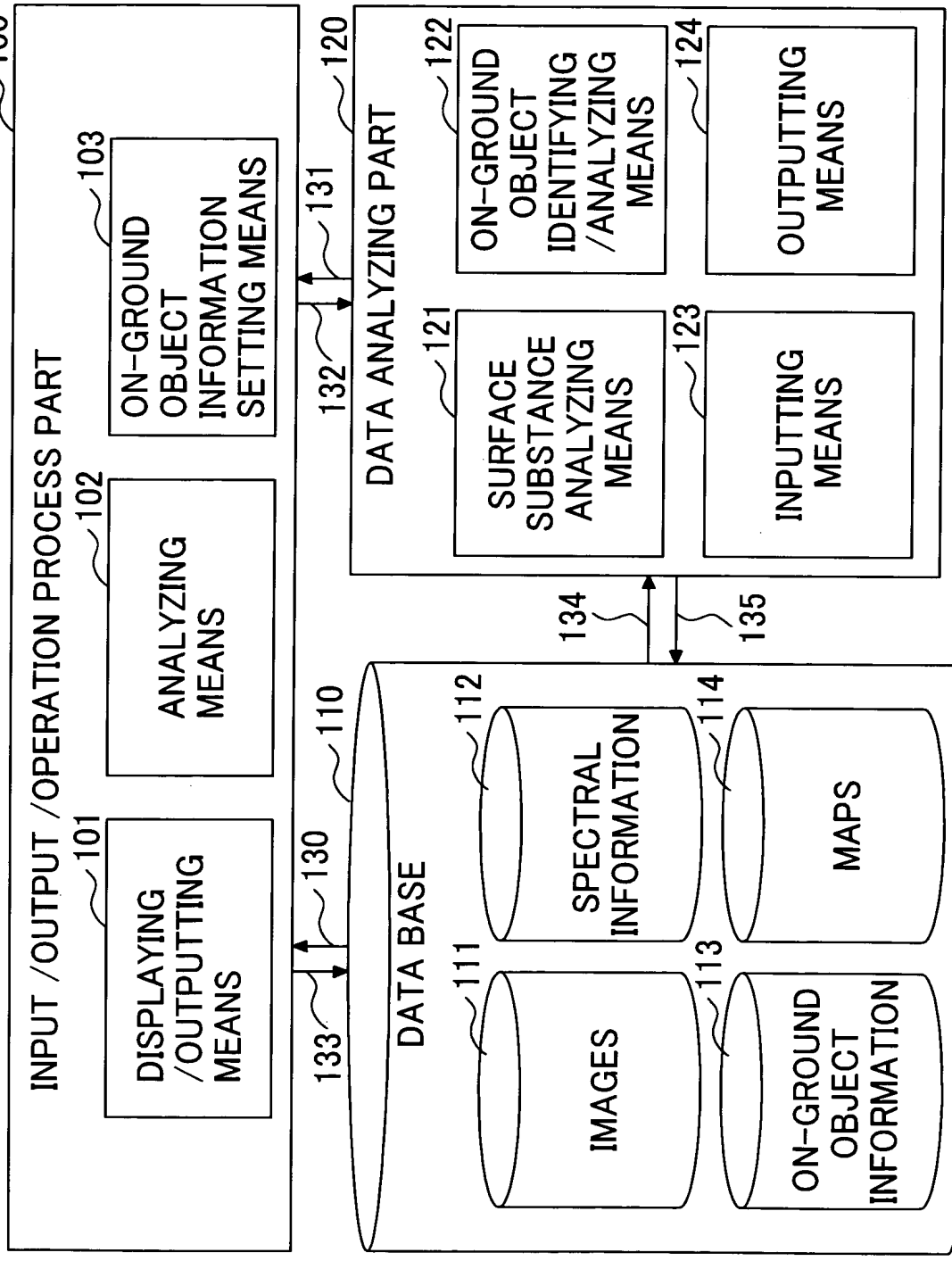

100
INPUT /OUTPUT /OPERATION PROCESS PART
101
DISPLAYING /OUTPUTTING MEANS
102
ANALYZING MEANS
103
ON-GROUND OBJECT INFORMATION SETTING MEANS
120
DATA ANALYZING PART
121
SURFACE SUBSTANCE ANALYZING MEANS
122
ON-GROUND OBJECT IDENTIFYING /ANALYZING MEANS
123
INPUTTING MEANS
124
OUTPUTTING MEANS
130
131
132
133
134
135
110
DATA BASE
111
IMAGES
112
SPECTRAL INFORMATION
113
ON-GROUND OBJECT INFORMATION
114
MAPS

FIG.2

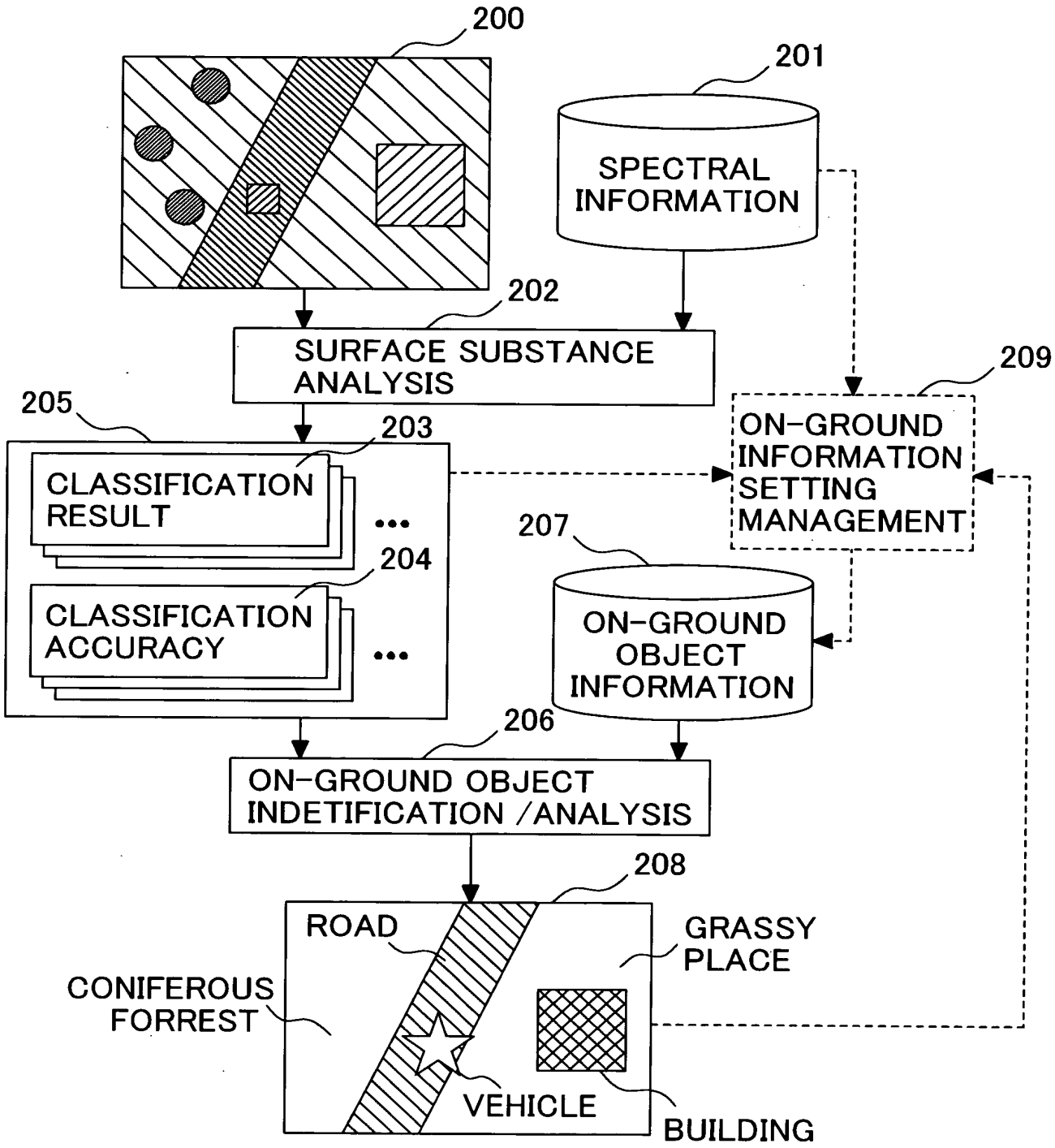

200
201
SPECTRAL INFORMATION
202
SURFACE SUBSTANCE ANALYSIS
209
205
203
ON-GROUND INFORMATION SETTING MANAGEMENT
CLASSIFICATION RESULT
...
207
204
CLASSIFICATION ACCURACY
...
ON-GROUND OBJECT INFORMATION
206
ON-GROUND OBJECT INDETIFICATION /ANALYSIS
208
ROAD
GRASSY PLACE
CONIFEROUS FORREST
VEHICLE
BUILDING

FIG.3

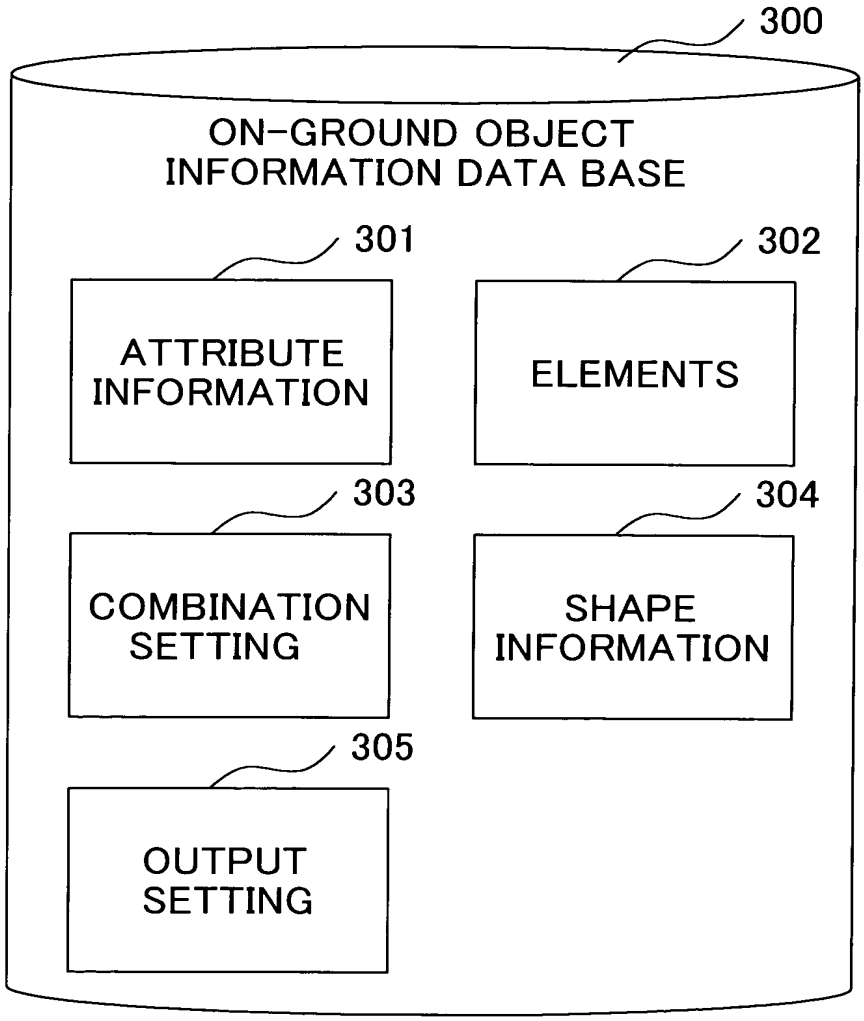

300
ON-GROUND OBJECT INFORMATION DATA BASE
301
ATTRIBUTE INFORMATION
302
ELEMENTS
303
COMBINATION SETTING
304
SHAPE INFORMATION
305
OUTPUT SETTING

FIG.4

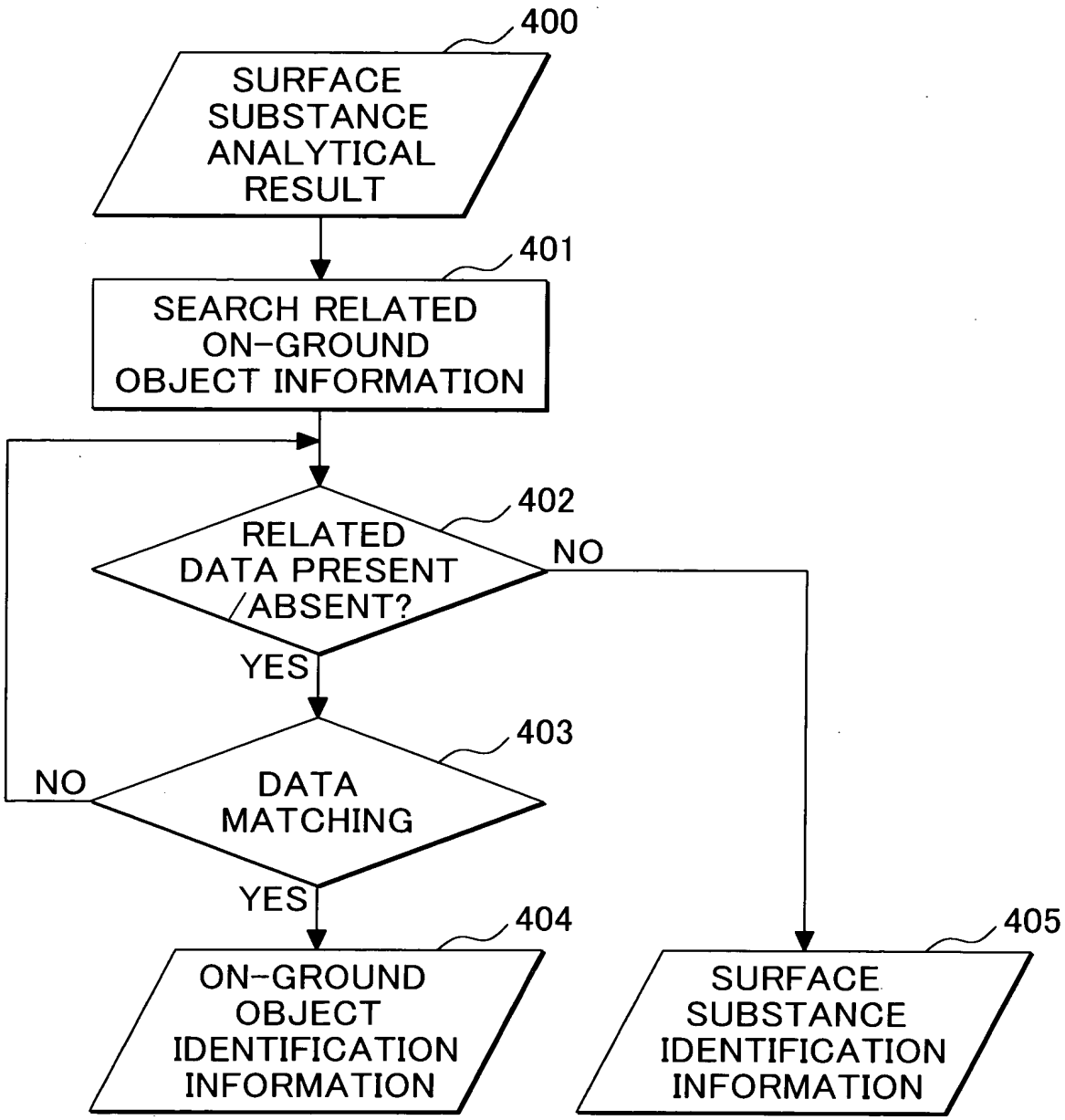
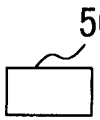

400
SURFACE SUBSTANCE ANALYTICAL RESULT
401
SEARCH RELATED ON-GROUND OBJECT INFORMATION
402
RELATED DATA PRESENT /ABSENT?
NO
YES
403
DATA MATCHING
NO
YES
404
ON-GROUND OBJECT IDENTIFICATION INFORMATION
405
SURFACE SUBSTANCE IDENTIFICATION INFORMATION

FIG.5A
MODEL



ON-GROUND OBJECT: VEHICLE
SURFACE SUBSTANCE: METAL

FIG.5B
PLURAL PIXELS

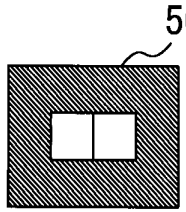
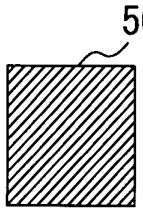
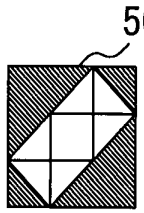


FIG.5C
IN A PIXCEL



ASPHALT: 50%
METAL: 40%
OTHERS: 10%

FIG.5D
IN A PLURAL PIXCELS & IN A PIXCEL



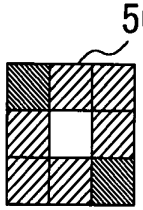


FIG.6A

SHAPE DETERMINATION

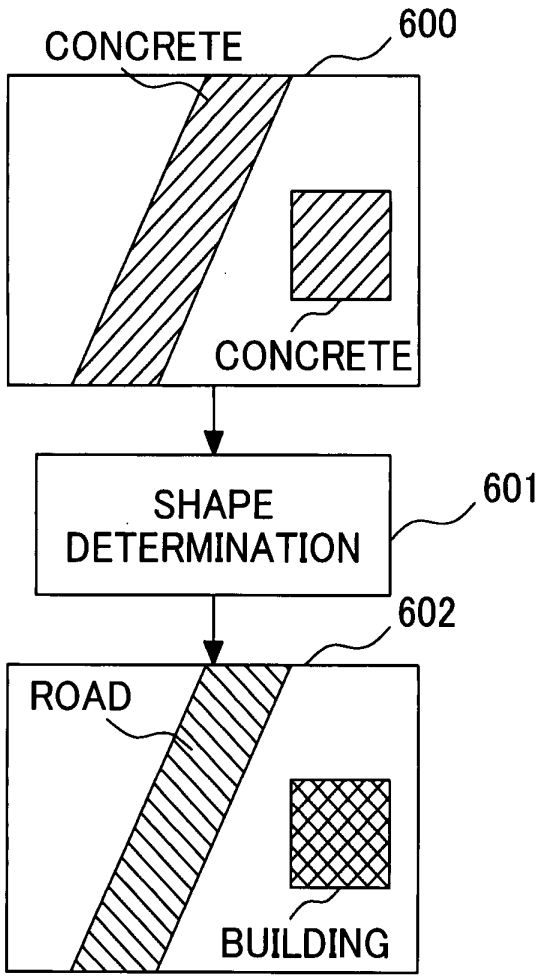


FIG.6B

CIRCUMSTANTIAL DETERMINATION

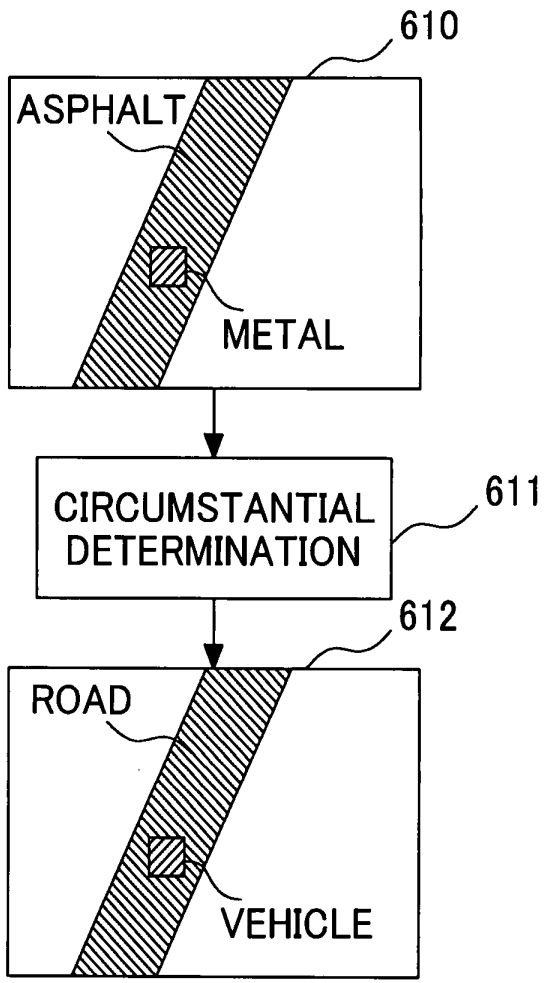


FIG.7A

DETAILED MAP

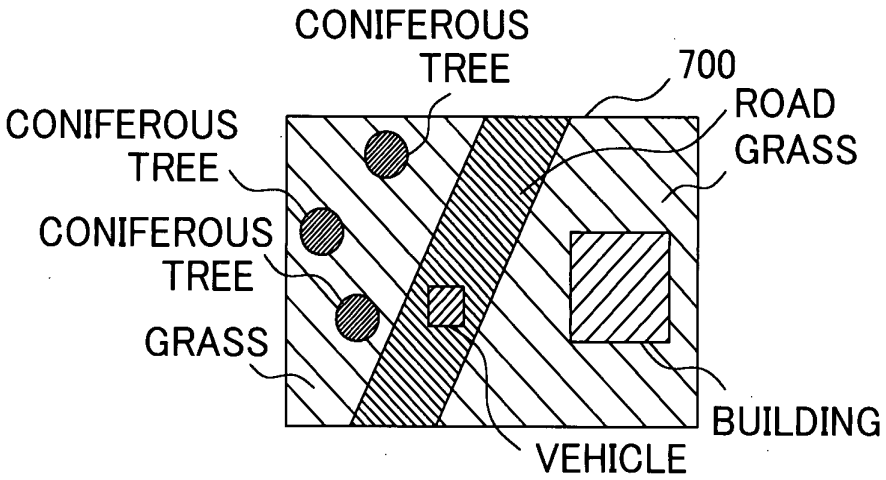


FIG.7B

SCHEMATIC MAP

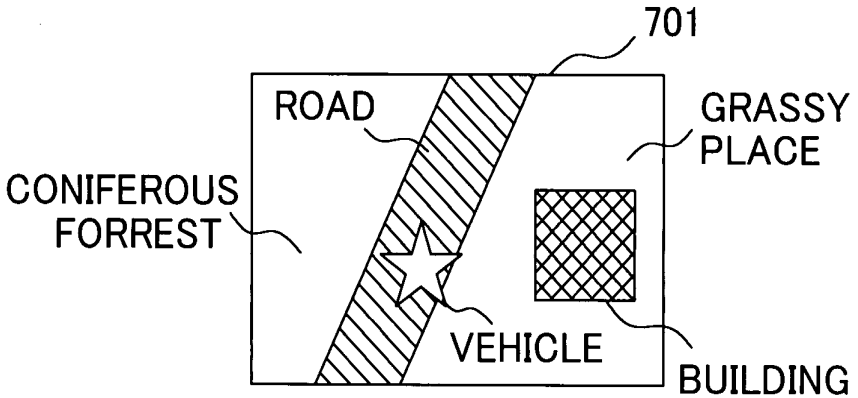


FIG.7C

SMALL-SCALE MAP

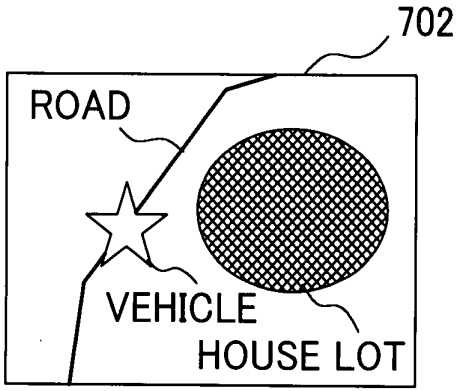


FIG.8

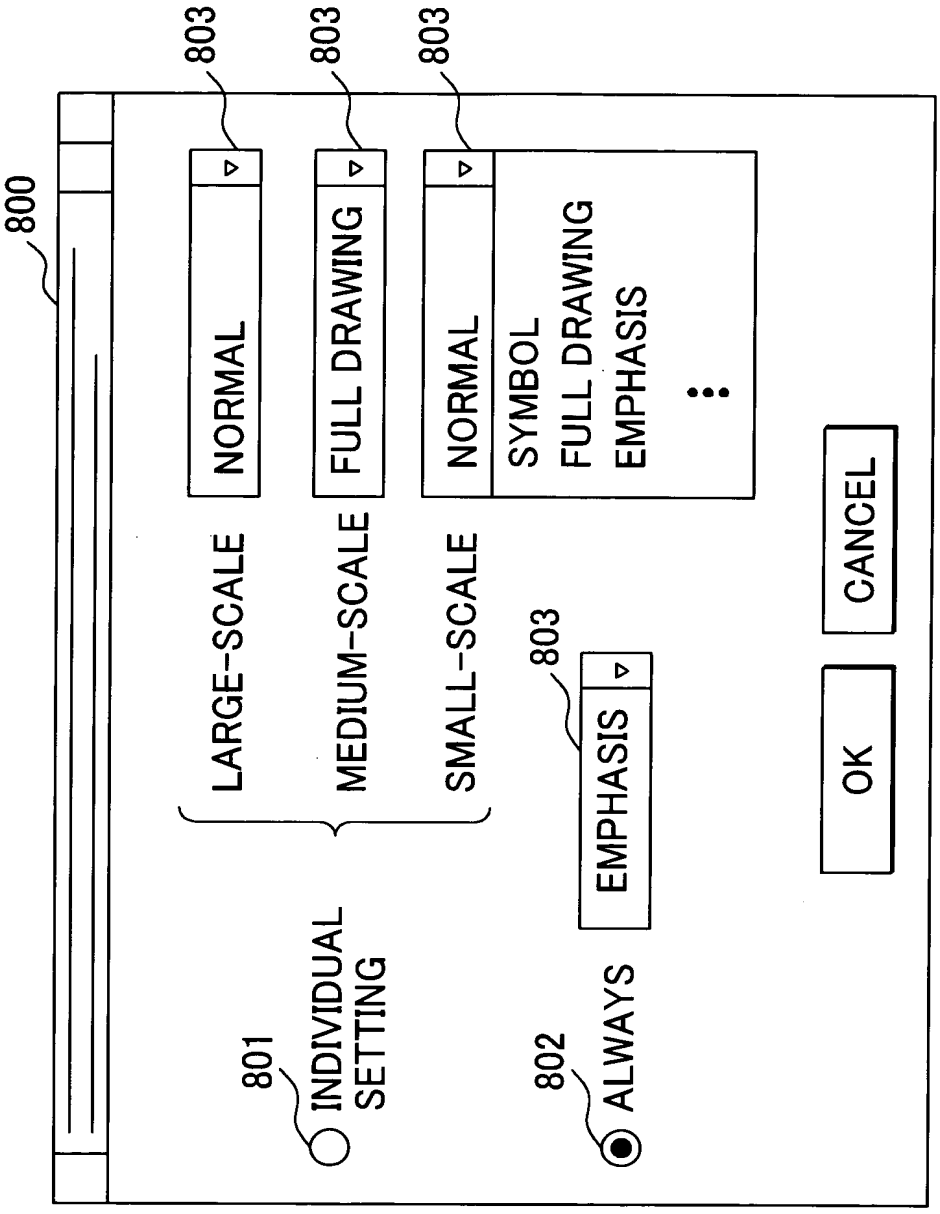

800
803
803
803
NORMAL
FULL DRAWING
NORMAL
SYMBOL
FULL DRAWING
EMPHASIS
LARGE-SCALE
MEDIUM-SCALE
SMALL-SCALE
803
EMPHASIS
801
INDIVIDUAL SETTING
802
ALWAYS
OK
CANCEL

FIG.9

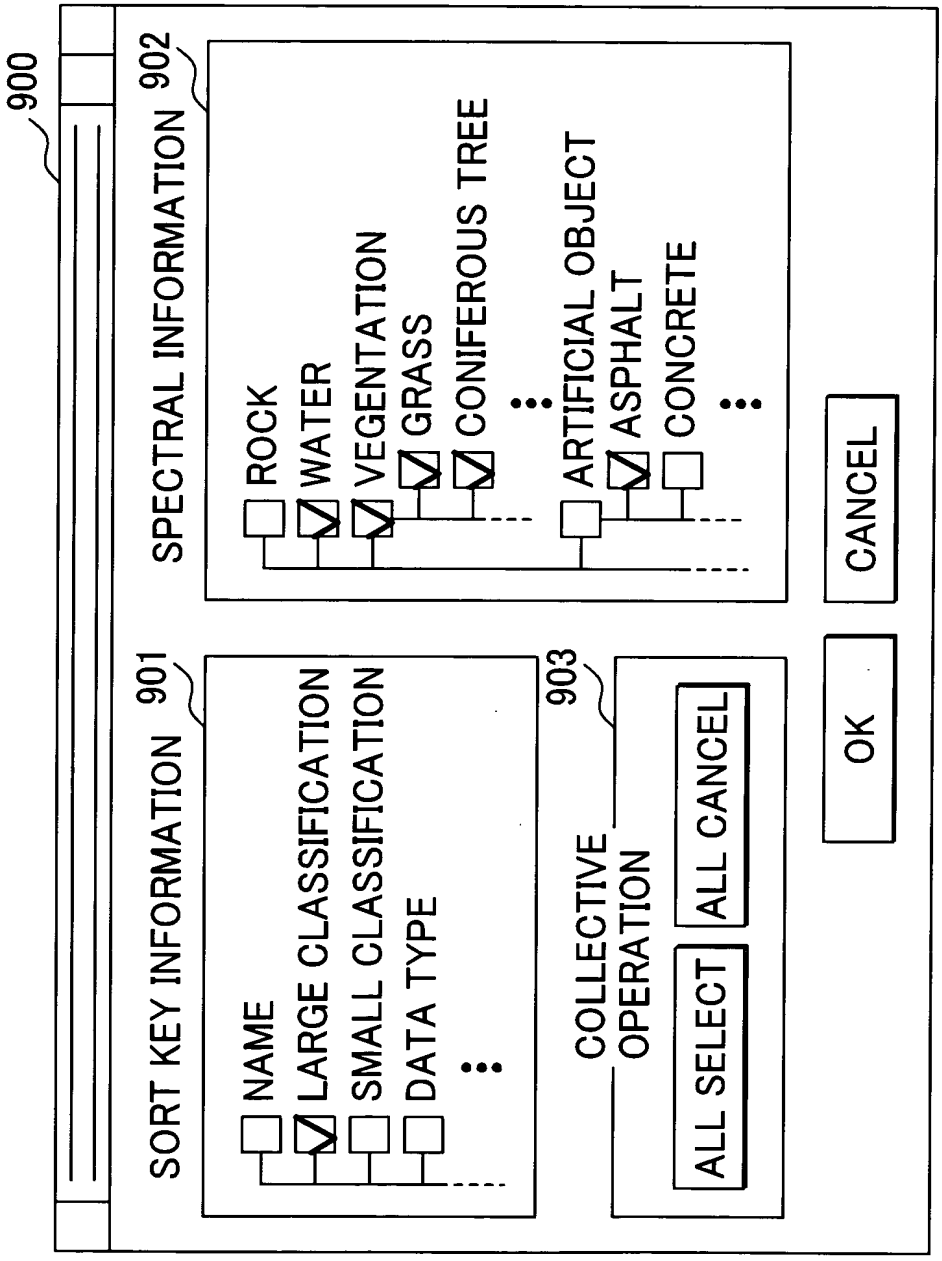

900
SORT KEY INFORMATION
901
NAME
LARGE CLASSIFICATION
SMALL CLASSIFICATION
DATA TYPE
SPECTRAL INFORMATION
902
ROCK
WATER
VEGENTATION
GRASS
CONIFEROUS TREE
ARTIFICIAL OBJECT
ASPHALT
CONCRETE
COLLECTIVE OPERATION
903
ALL SELECT
ALL CANCEL
OK
CANCEL

FIG.10

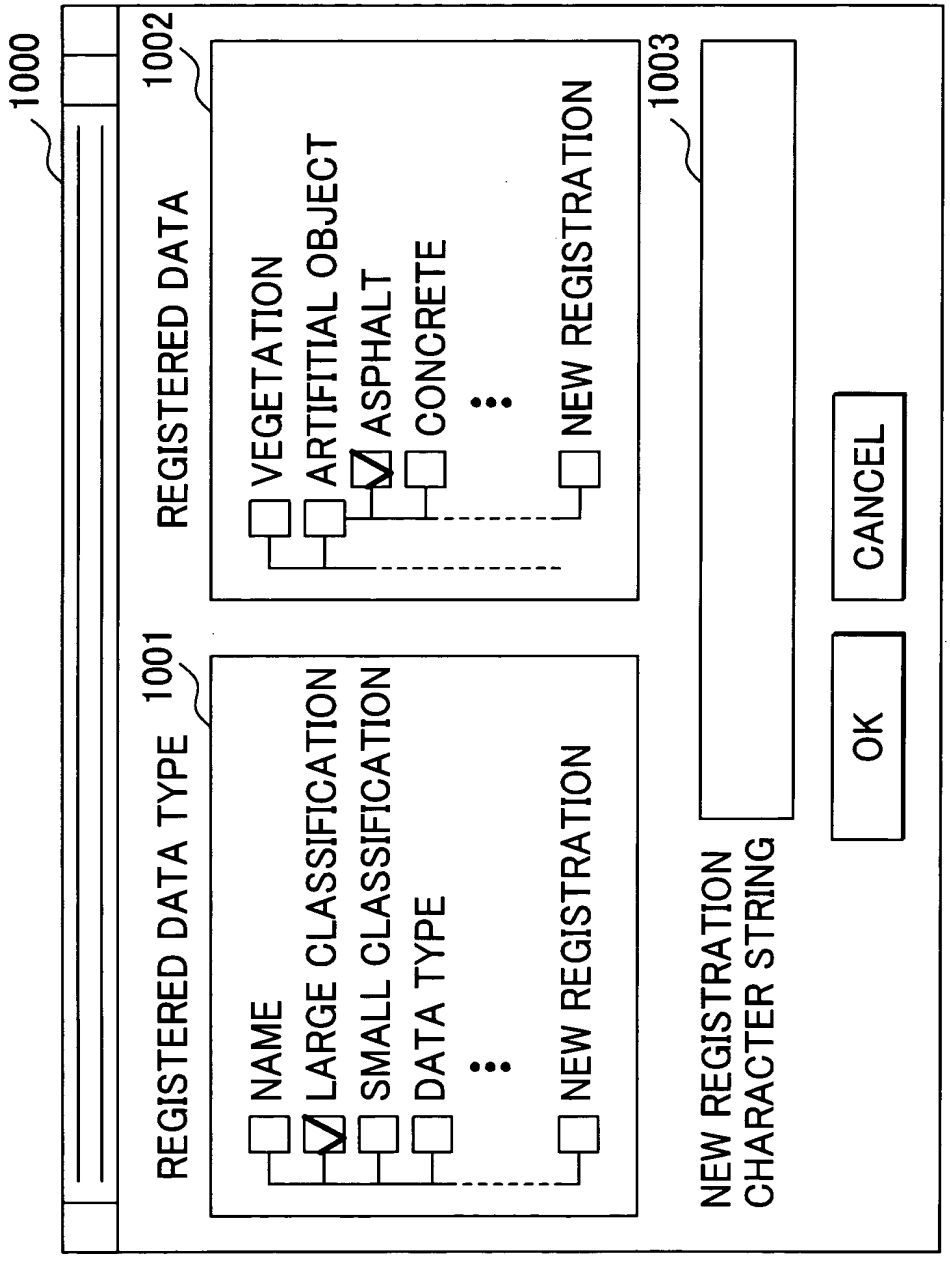

1000
1001
REGISTERED DATA TYPE
NAME
LARGE CLASSIFICATION
SMALL CLASSIFICATION
DATA TYPE
NEW REGISTRATION
1002
REGISTERED DATA
VEGETATION
ARTIFITIAL OBJECT
ASPHALT
CONCRETE
NEW REGISTRATION
1003
NEW REGISTRATION CHARACTER STRING
OK
CANCEL

FIG.11

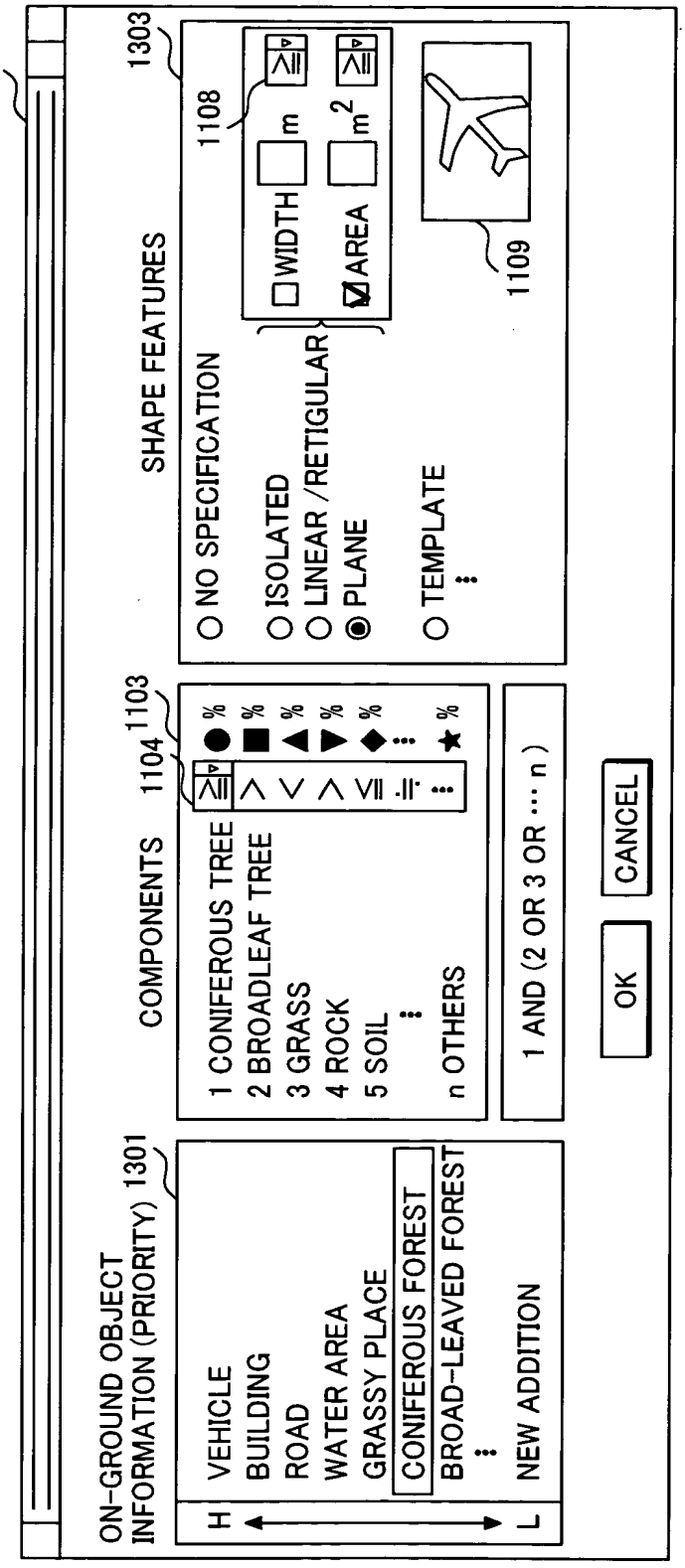

1300
ON-GROUND OBJECT INFORMATION (PRIORITY)
1301
H
L
VEHICLE
BUILDING
ROAD
WATER AREA
GRASSY PLACE
CONIFEROUS FOREST
BROAD-LEAVED FOREST
NEW ADDITION
COMPONENTS
1104
1103
1 CONIFEROUS TREE
2 BROADLEAF TREE
3 GRASS
4 ROCK
5 SOIL
n OTHERS
1 AND (2 OR 3 OR ··· n)
OK
CANCEL
SHAPE FEATURES
1303
NO SPECIFICATION
ISOLATED
LINEAR /RETIGULAR
PLANE
TEMPLATE
1108
WIDTH
m
AREA
m2
1109

FIG.12

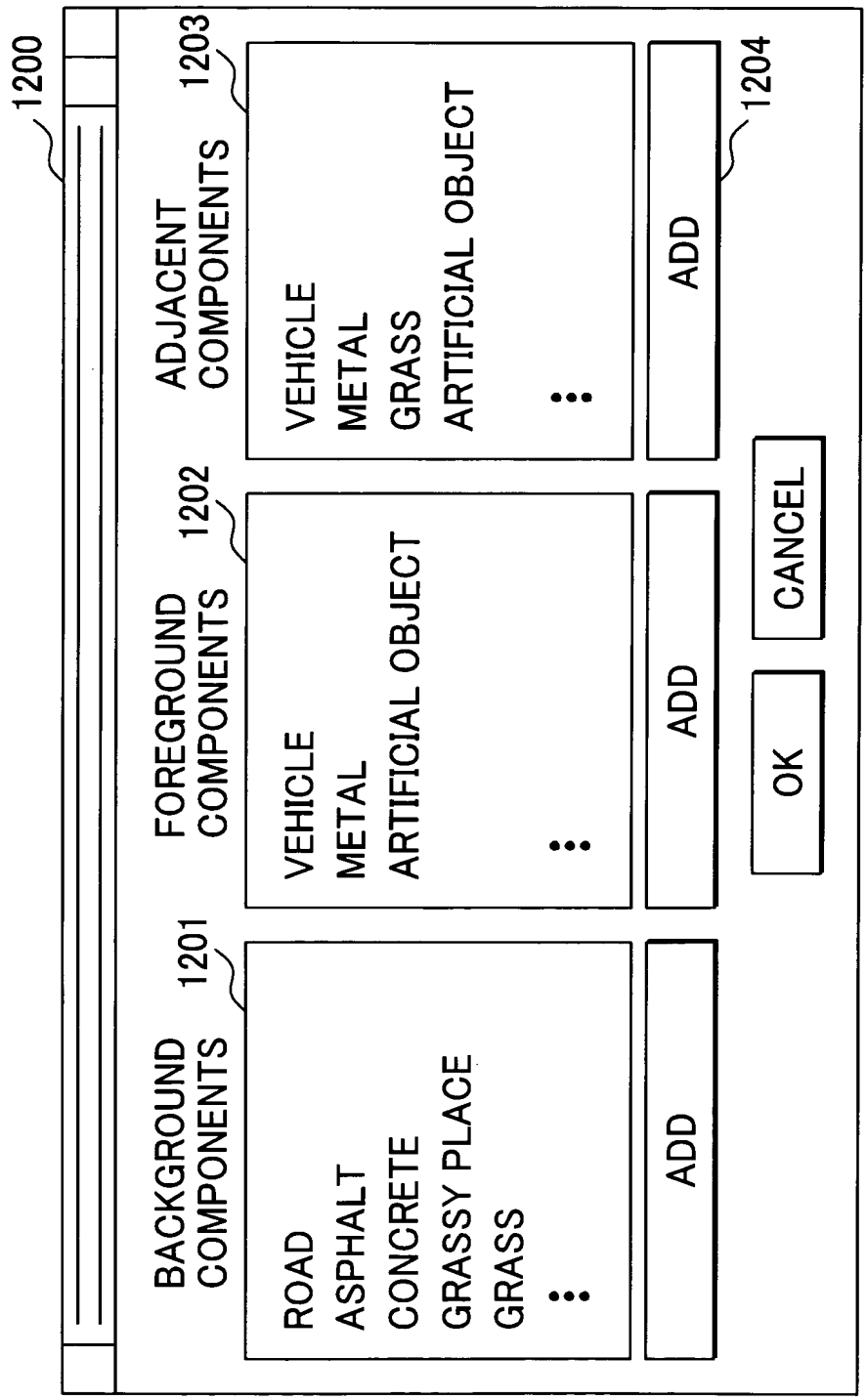

1200
BACKGROUND COMPONENTS
1201
ROAD
ASPHALT
CONCRETE
GRASSY PLACE
GRASS
...
ADD
FOREGROUND COMPONENTS
1202
VEHICLE
METAL
ARTIFICIAL OBJECT
...
ADD
ADJACENT COMPONENTS
1203
VEHICLE
METAL
GRASS
ARTIFICIAL OBJECT
...
ADD
1204
OK
CANCEL

FIG.13A

TARGET EMPHASIS SETTING GUI

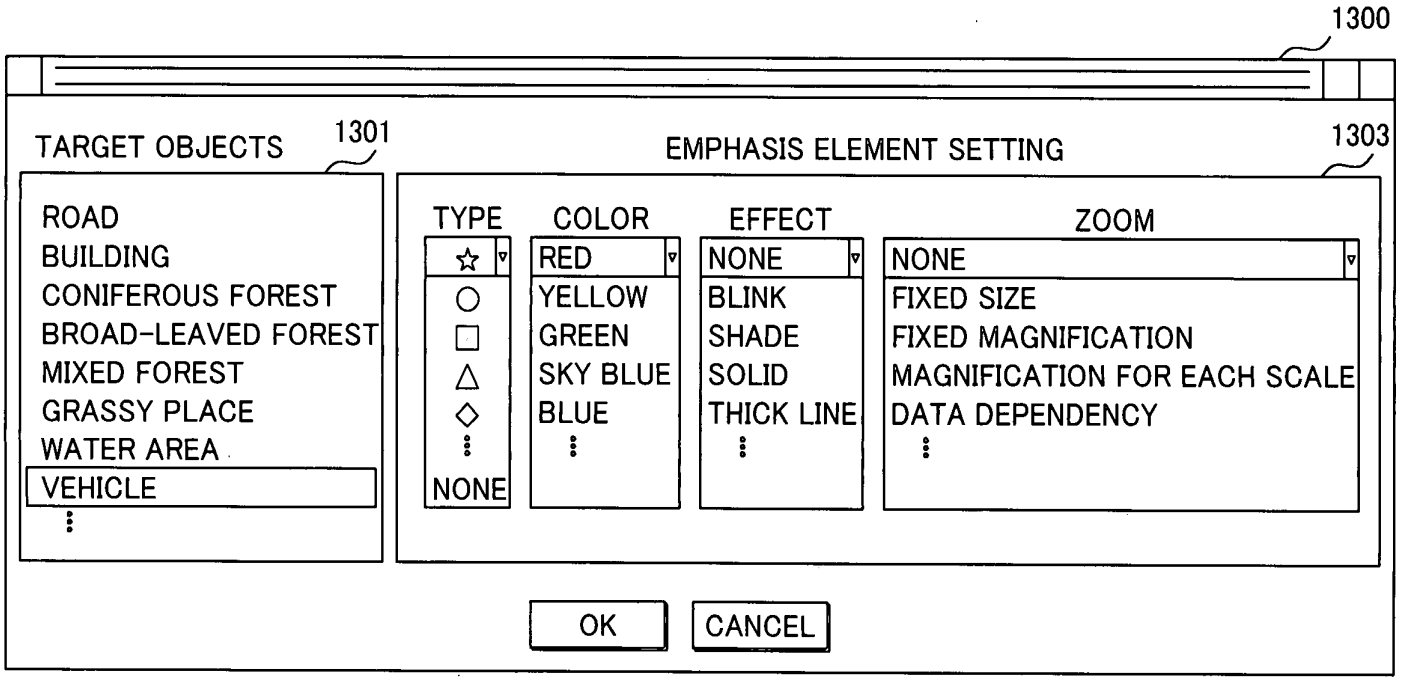


FIG.13B

TARGET EMPHASIS SETTING GUI

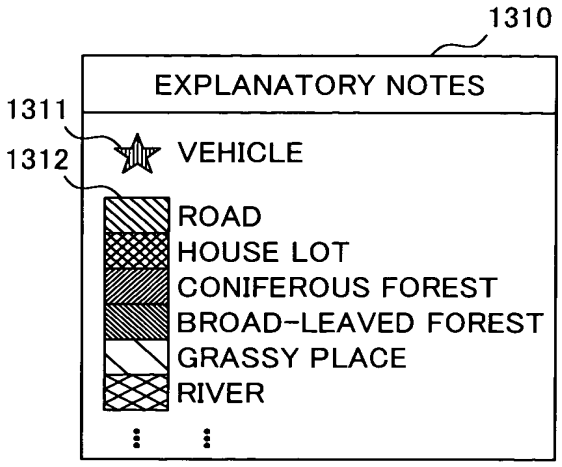


FIG.14A

TARGET RECOGNITION /CORRECTION OF MISREADING GUI

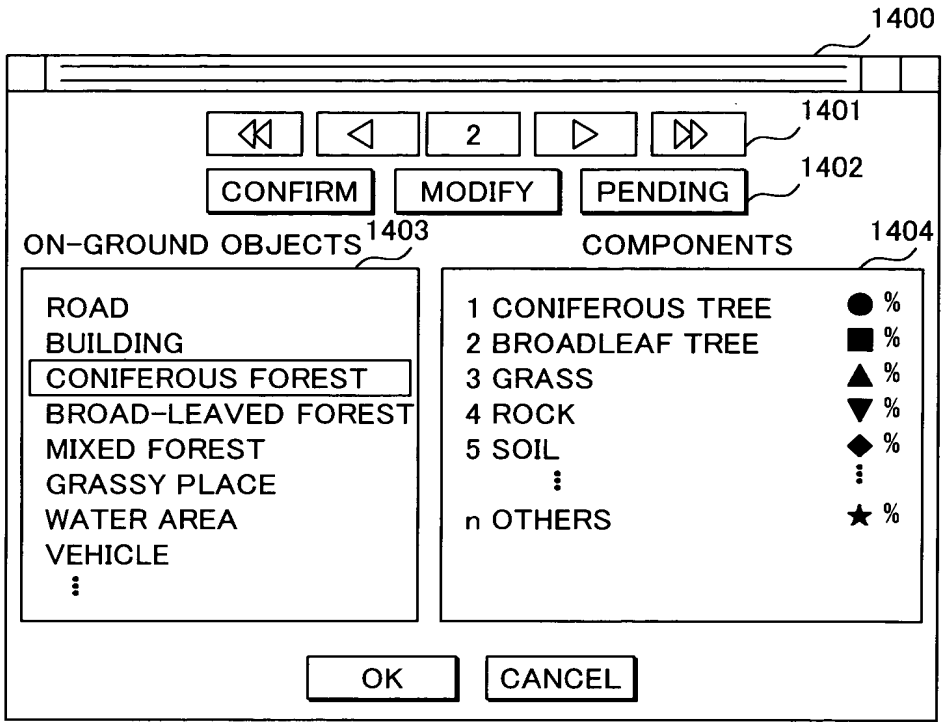


FIG.14B

RECOGNITION SCREEN

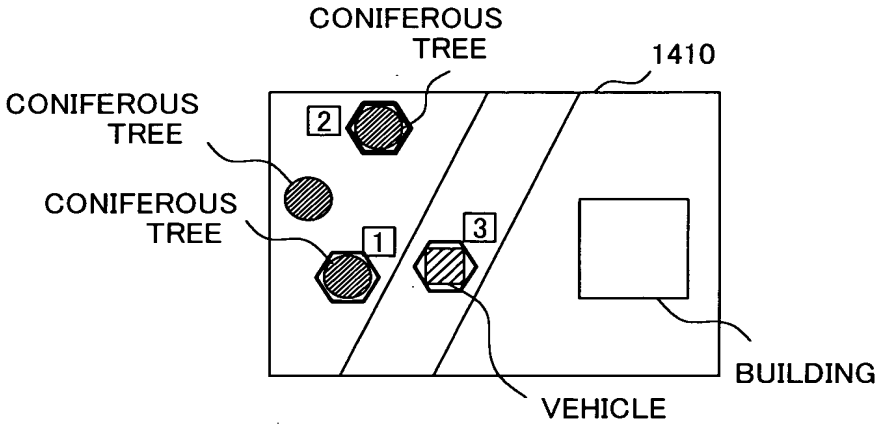


FIG.14C

EXPANDEDRECOGNITION SCREEN

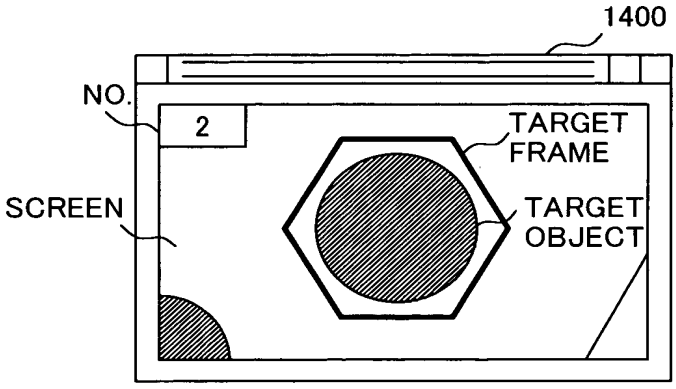


FIG.15

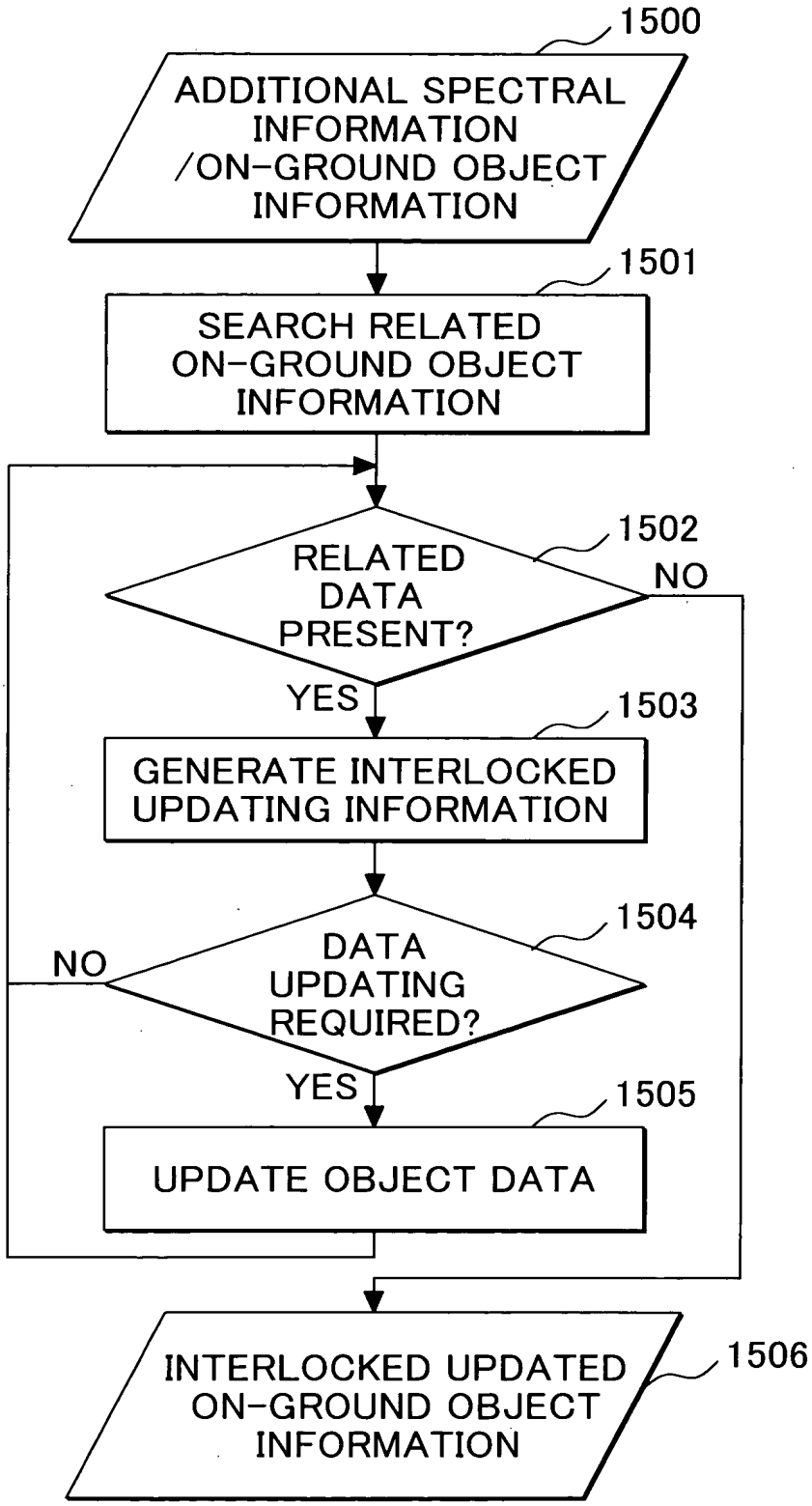

1500
ADDITIONAL SPECTRAL INFORMATION /ON-GROUND OBJECT INFORMATION
1501
SEARCH RELATED ON-GROUND OBJECT INFORMATION
1502
RELATED DATA PRESENT?
NO
YES
1503
GENERATE INTERLOCKED UPDATING INFORMATION
1504
DATA UPDATING REQUIRED?
NO
YES
1505
UPDATE OBJECT DATA
INTERLOCKED UPDATED ON-GROUND OBJECT INFORMATION
1506

FIG.16

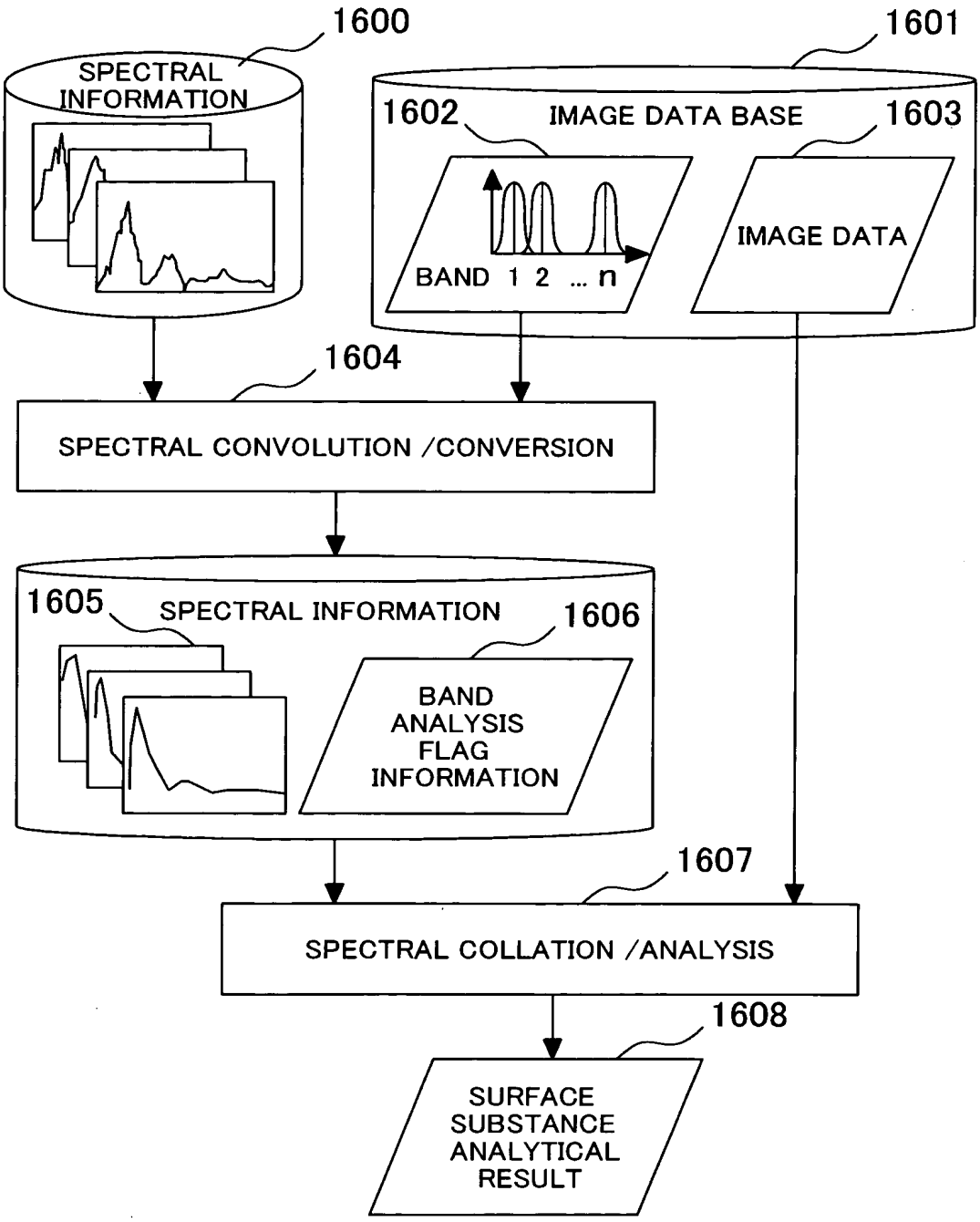

1600
SPECTRAL INFORMATION
1601
1602
IMAGE DATA BASE
1603
BAND 1 2 ... n
IMAGE DATA
1604
SPECTRAL CONVOLUTION /CONVERSION
1605
SPECTRAL INFORMATION
1606
BAND ANALYSIS FLAG INFORMATION
1607
SPECTRAL COLLATION /ANALYSIS
1608
SURFACE SUBSTANCE ANALYTICAL RESULT

FIG.17

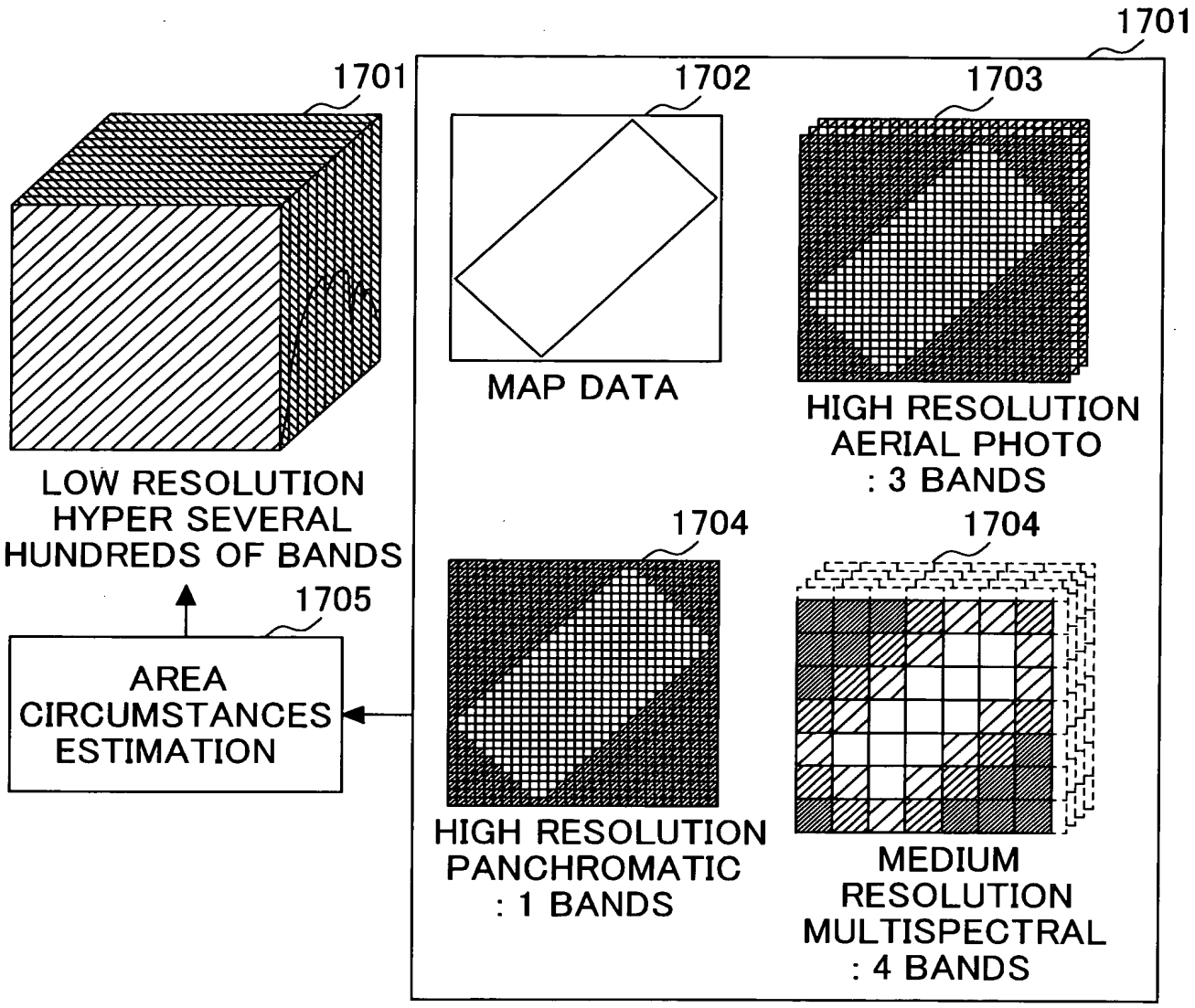

1701
1701
1702
1703
MAP DATA
HIGH RESOLUTION
AERIAL PHOTO
: 3 BANDS
LOW RESOLUTION
HYPER SEVERAL
HUNDREDS OF BANDS
1704
1704
1705
AREA
CIRCUMSTANCES
ESTIMATION
HIGH RESOLUTION
PANCHROMATIC
: 1 BANDS
MEDIUM
RESOLUTION
MULTISPECTRAL
: 4 BANDS

FIG.18

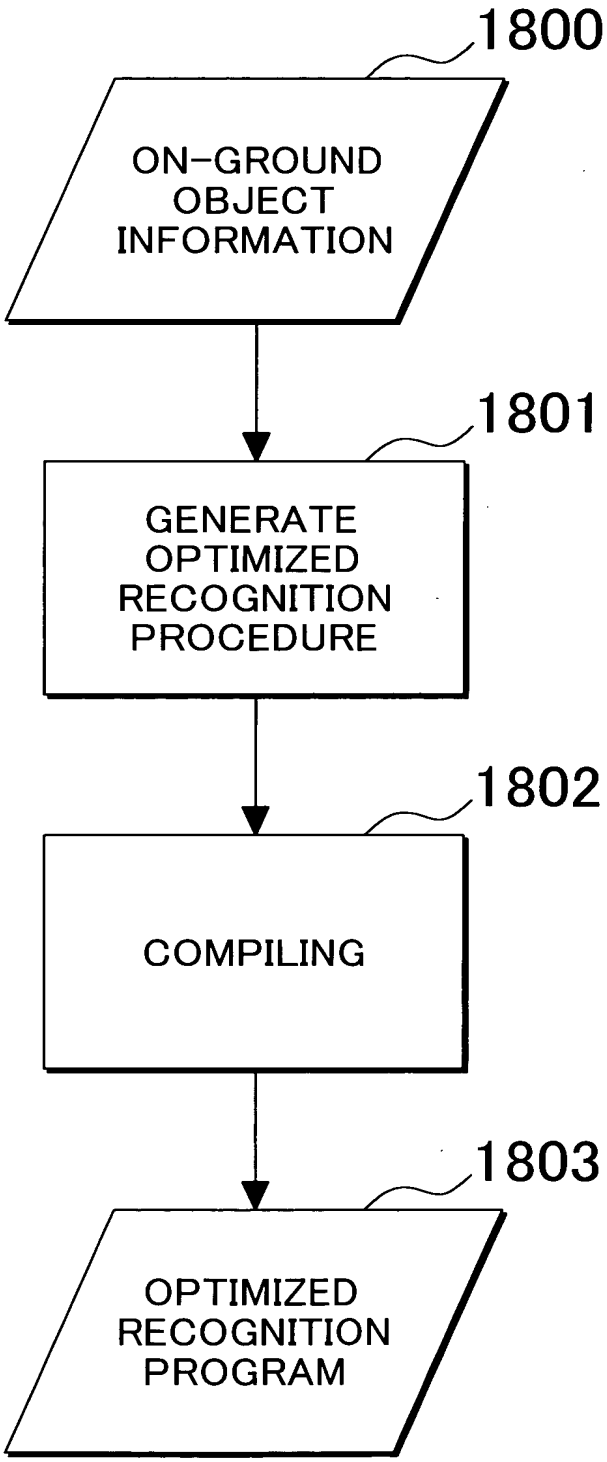

1800
ON-GROUND OBJECT INFORMATION
1801
GENERATE OPTIMIZED RECOGNITION PROCEDURE
1802
COMPILING
1803
OPTIMIZED RECOGNITION PROGRAM

FIG.19
EXAMPLE OF NOTICE INTERFACE

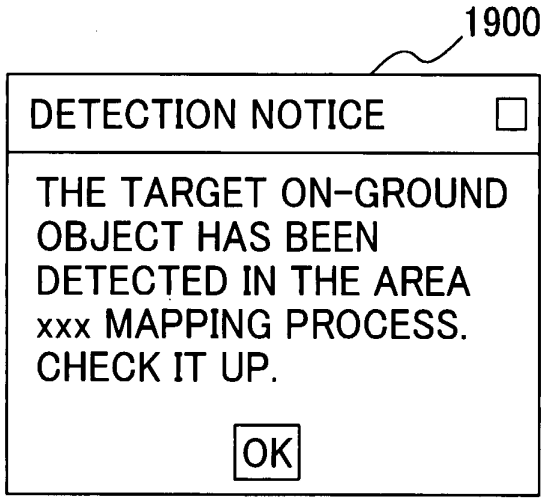


FIG.19
DOCUMENT OUTPUT EXAMPLE

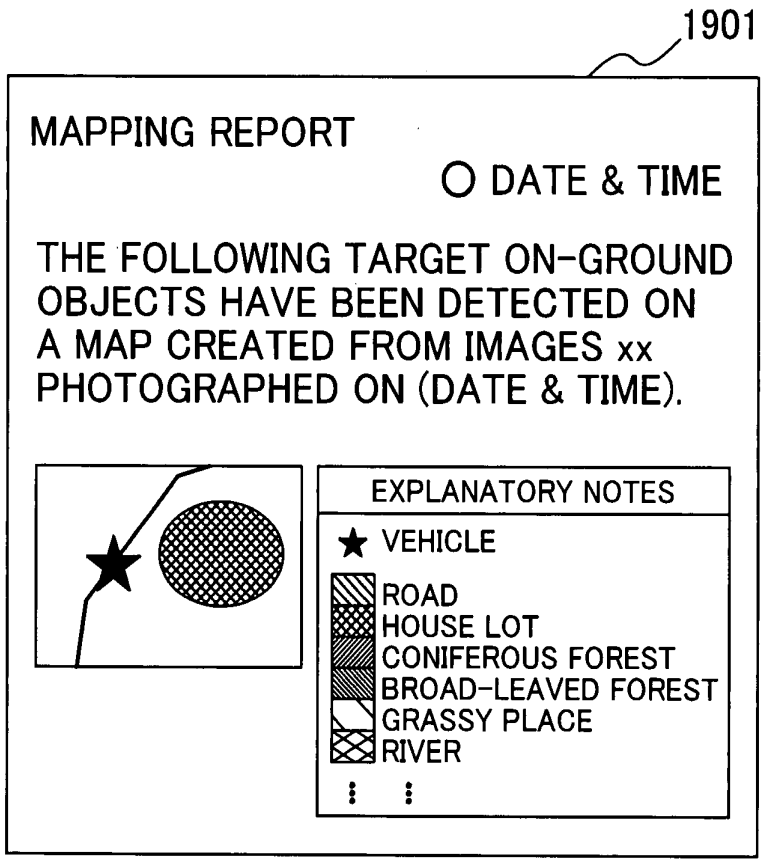


FIG.20

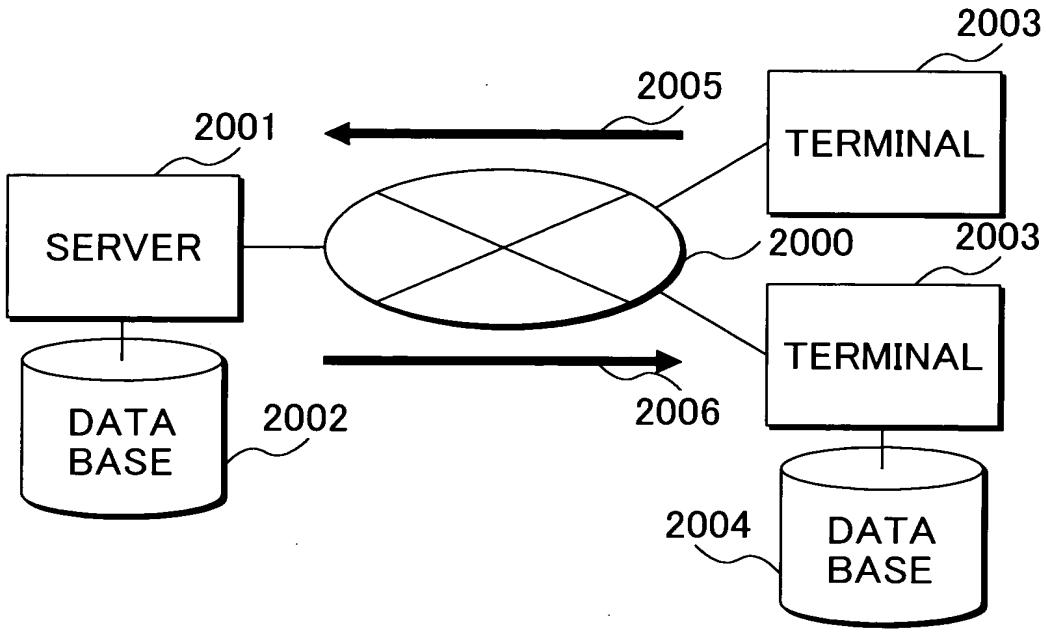

2003
2005
TERMINAL
2001
SERVER
2000
2003
TERMINAL
DATA
BASE
2002
2006
2004
DATA
BASE

FIG.21A

SURFACE SUBSTANCE ANALYTICAL PROCESSING

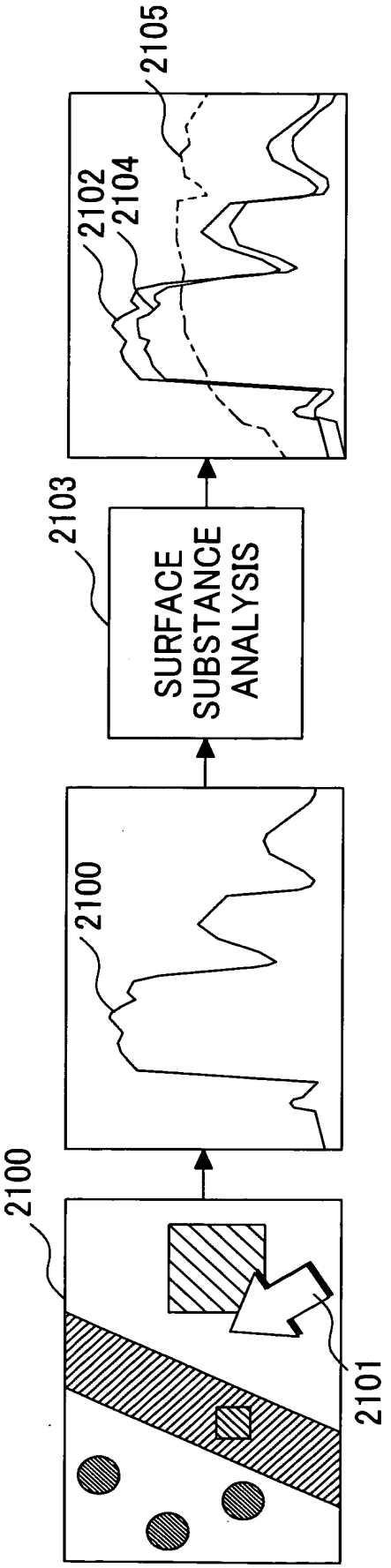
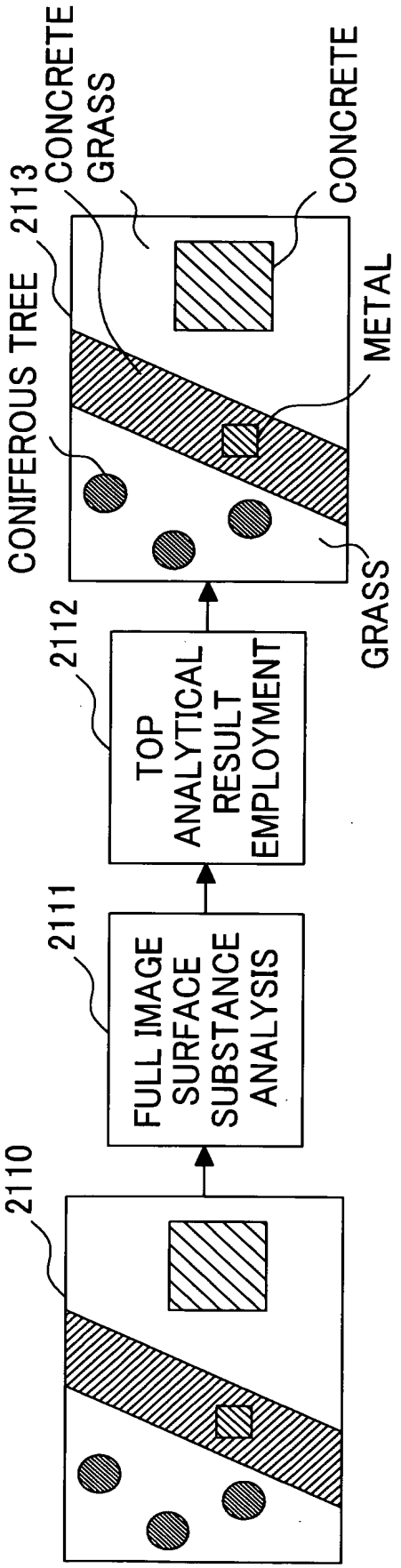


FIG.21B

LAND COVERAGE CLASSIFICATION MAPPING PROCESS